Hazardous Weather Testbed / Social Science Collaborations

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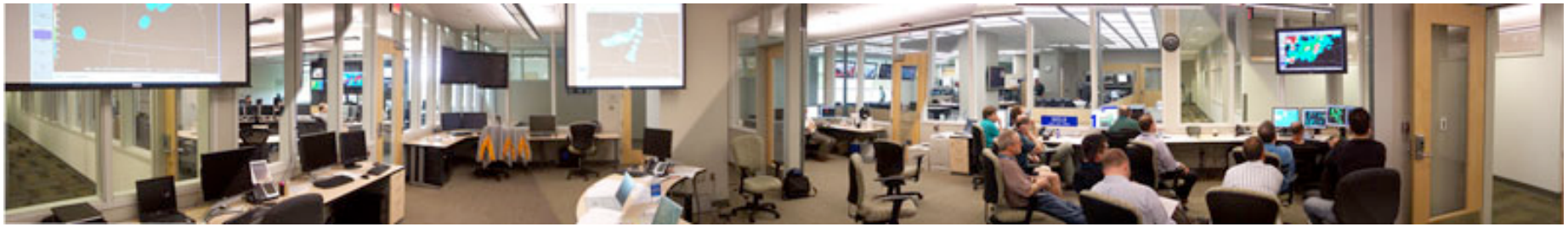
2nd USWRP Workshop on NOAA Testbeds
May 4-5, 2010
Boulder, CO

NOAA Hazardous Weather Testbed



Storm Prediction Center
Norman, Oklahoma

Experimental
Forecast
Program

*Prediction of hazardous weather events from **a few hours to a week in advance***

EFP

EWP

GOES-R
Proving Ground

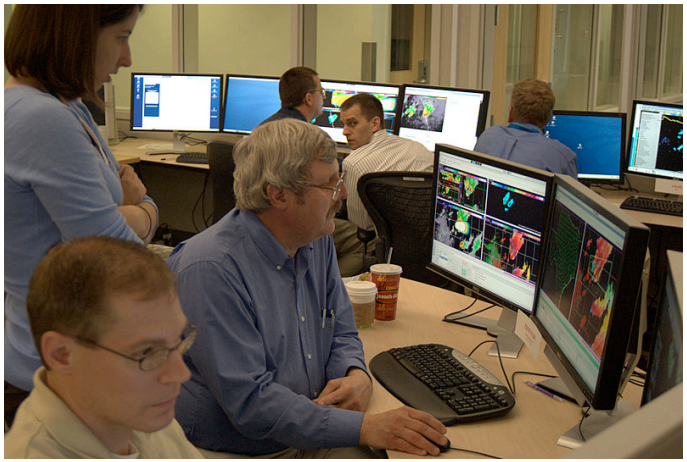
Experimental
Warning
Program

*Detection and prediction of hazardous weather events **up to several hours in advance***

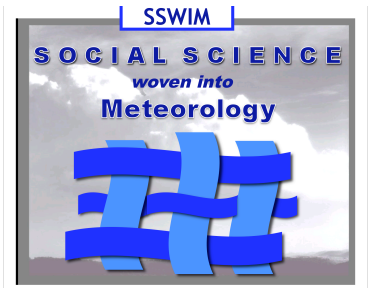
HWT Experimental Warning Program

Mission: **to improve the nation's hazardous weather warning services** by development and testing of:

- Observing platforms
- Applications / algorithms / support systems
- Products / services



Goal: Improve decision support for the prediction of high impact severe weather hazards at the warning / nowcast scale (0-2 hours) for all WFOs.



SSWIM www.sswim.org Social Science Woven into Meteorology

Vision

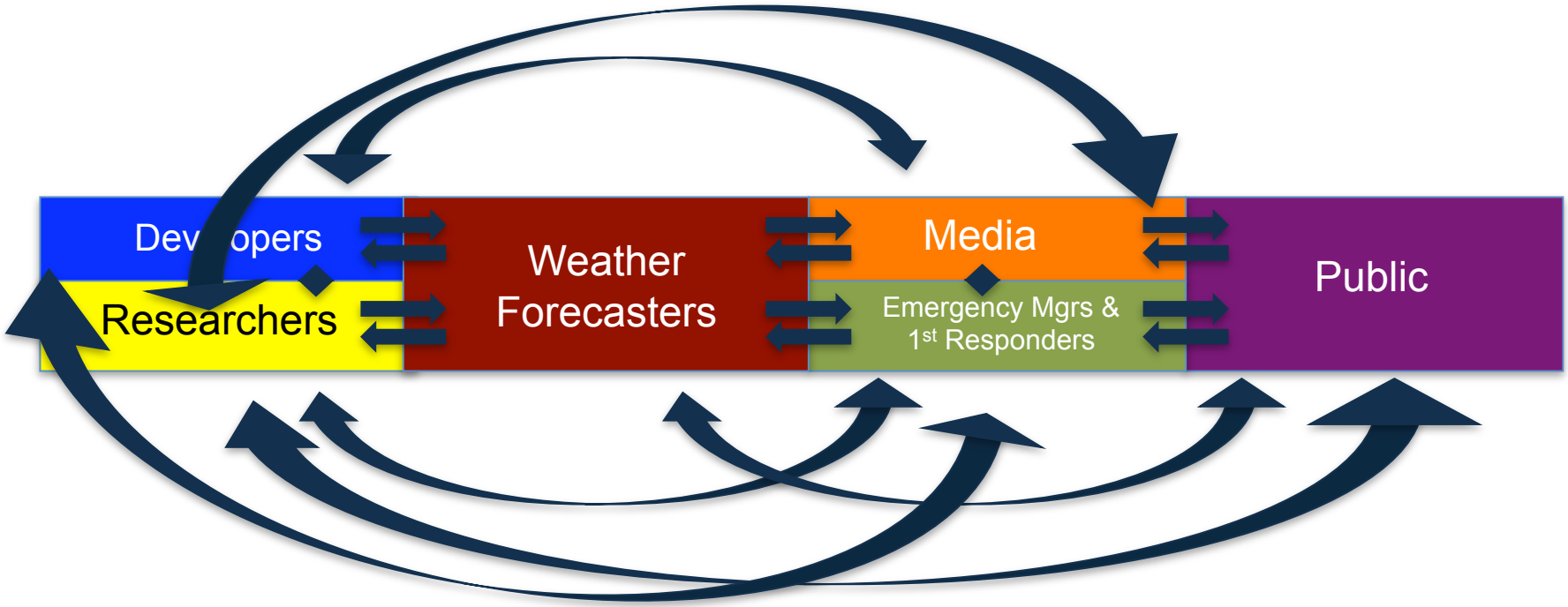
Collaborative research & partnerships between the social sciences & meteorology, climatology, & hydrology to enhance societal relevance of research & practice & reduce risks from atmospheric & other hazards

Mission

Creatively & sustainably weave social science concepts & methodologies into the fabric of weather & climate research & practice through academic & professional activities locally, nationally & globally

Source: Dr. Heather Lazrus (SSWIM)

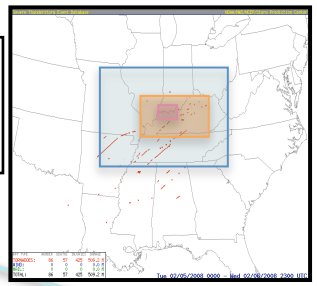
Completing the Forecast: Improving Effectiveness of NWS Services



Source: Dr. Heather Lazrus (SSWIM)

A Continuous Stream of Weather Decision Support Information

Scales: Regional, State, Local



Awareness raised among EMs and other officials

Nashville sirens sounded

Hospitals, Schools, Events?

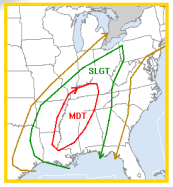
Time Scale

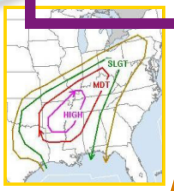
- 5 | - 4 | - 3 | - 2 | - 1 | 0

Jan 31 | Feb 1 | Feb 2 | Feb 3 | Feb 4 | Feb 5

13 fatalities
44 injuries
Lafayette, TN

26 tornado warnings issued
8 severe storm warnings





1st warning issued (9pm)

1st watch issued (2pm)

2nd watch issued (3pm)

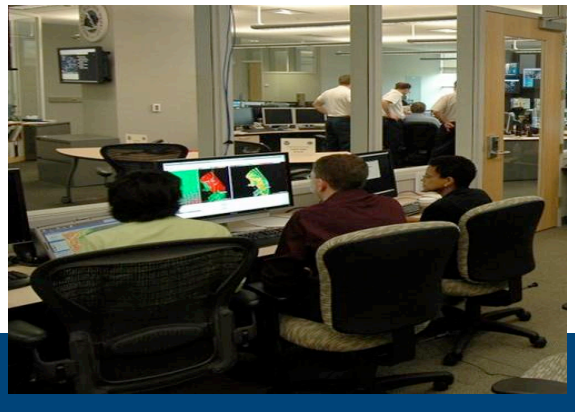
First outlook issued

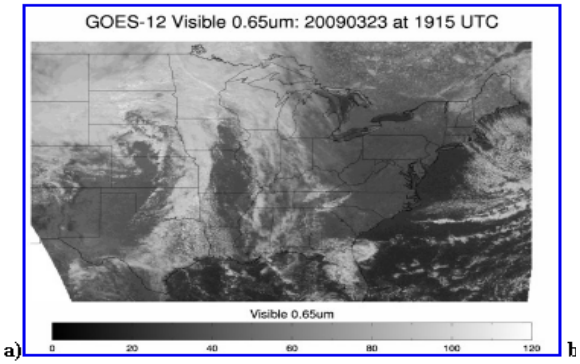
Source: Dr. Heather Lazrus (SSWIM)

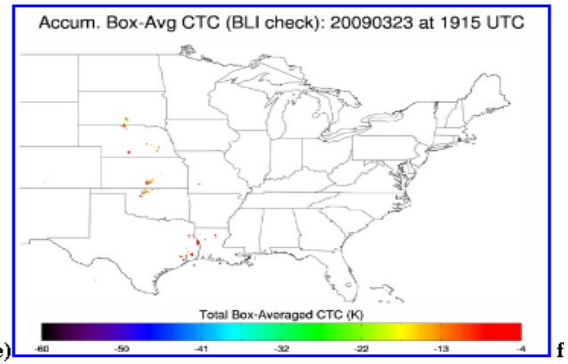
EWP Experiments - 2010

Broad Collaboration, National scope

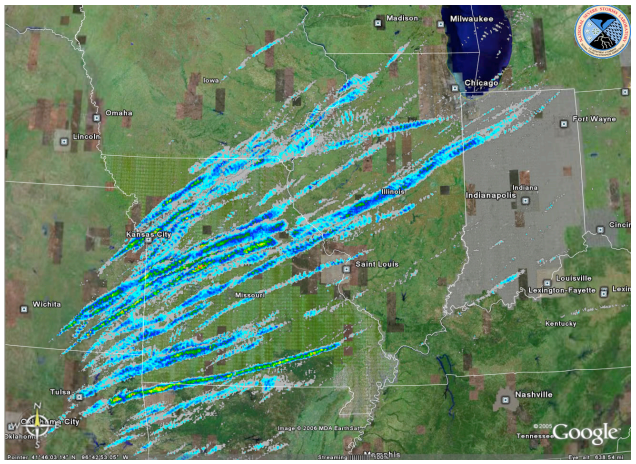
- 34 NWS forecasters (from all NWS regions)
- NWS HQs
- MDL
- NOAA / NASA research
- Multiple university collaborators



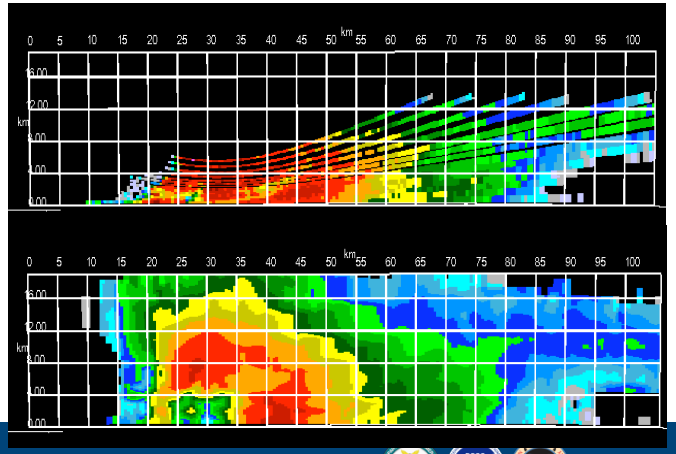




GOES-R products, such as Convective Initiation and Global Lightning Mapping (proxy)



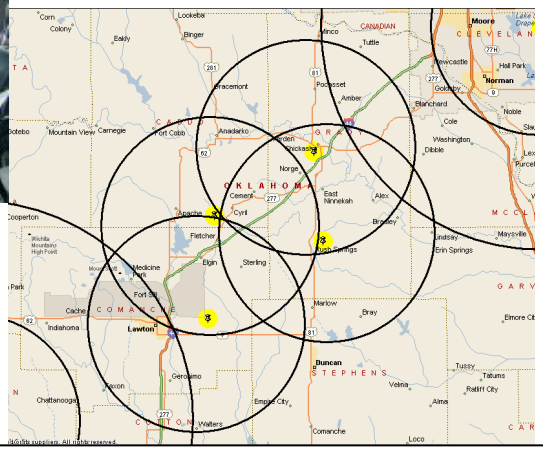
Multi-radar / multi-sensor products, such as 3D CONUS reflectivity / shear, hail size estimates, “rotation tracks”

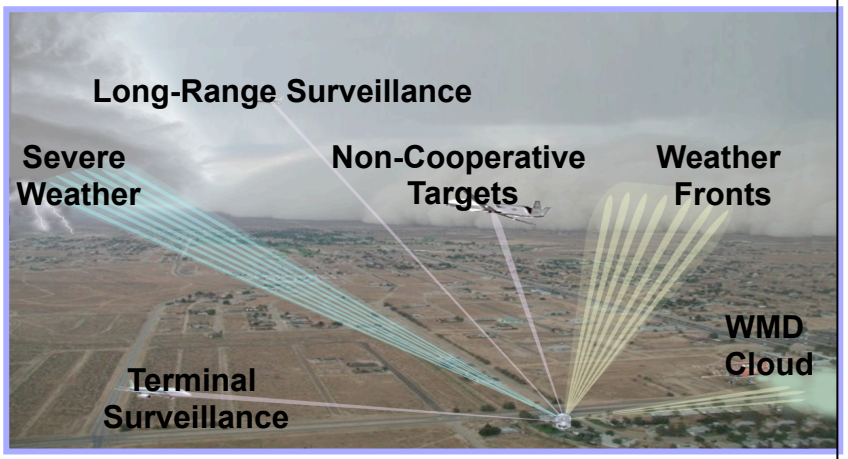


Ongoing social science work in the HWT (Spring 2010)

CASA (Philips, Bass, Brotzge):

Understand how CASA data might impact NWS and EM severe weather decision making





MPAR (Heinselman, Lazrus, LaDue):

Determine potential operational impact of temporal resolution on warning decision process and warning lead time.

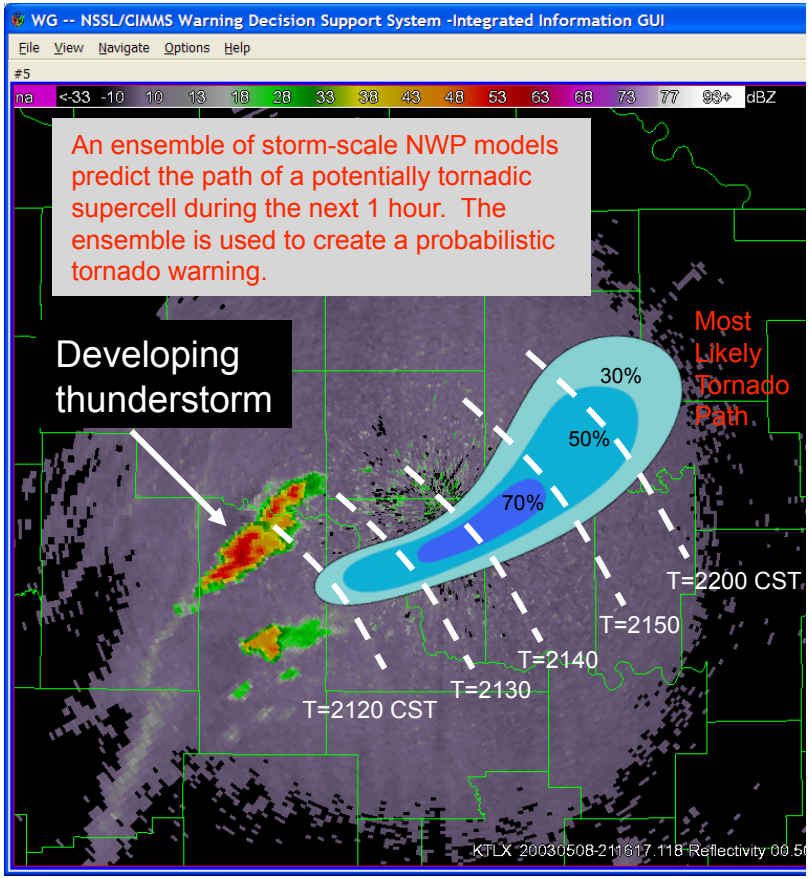
The path to Warn-on-Forecast

Probabilistic Hazard Information (PHI) is coming

- initially based on multi-sensor / multi-radar analysis and data mining for entire WSR-88D era (1995-now)
- storm-scale model ensemble

First WoF test – Spring 2010:

- Real-time assimilation @ 1km w/ 5-min updates (3DVAR)



Courtesy Lou Wicker, NSSL

SSWIM WoF Collaboration

Potential Research Questions:

How can longer lead times and probabilistic information revise the present warning - response paradigm?

How does the communication for variables of lead time and uncertainty relate to target population variables such as age, education, gender, income, and race?

What are the preferred communication mediums for different target populations?

Ongoing items

- Two new SSWIM GRAs (Summer or Fall 2010) to collaborate with HWT and WoF.
- Migrating HWT data servers and displays to AWIPS2 (Summer 2010)
  - Support from WoF program (1 new FTE)
- Revised severe weather warning paradigm:
  - science & decision support concepts for high-impact convective weather
  - communication with different “publics”
  - collaboration on IHIS for AWIPS2

Contact Information

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Thank you!